

Exhibit A – Agreed Constructions

Term	Agreed Construction
“frequency band(s)” <ul style="list-style-type: none">• ’432: 1, 6• ’431: 1, 14, 30• ’541: 17, 23• ’069: 32• ’421: 1, 11	“a range of frequencies”

Exhibit B – Disputed Constructions

Term	Fractus’ Proposed Construction and Evidence	TCL’s Proposed Construction and Evidence
<p>“multilevel structure”</p> <ul style="list-style-type: none"> • ’431: 1, 14, 30 • ’432: 1, 6 • ’541: 17 	<p>Fractus: “A structure for an antenna useable at multiple frequency bands with at least two levels of detail, wherein one level of detail makes up another level. These levels of detail are composed of polygons (polyhedrons) of the same type with the same number of sides (faces) wherein most of the polygons (polyhedrons) are clearly visible and individually distinguishable and most of the polygons (polyhedrons) having an area of contact, intersection or interconnection with other elements (polygons or polyhedrons) that is less than 50% of the perimeter or area.”</p> <p><u>Intrinsic Evidence:</u></p> <p><i>Specification (’432 patent):</i></p> <ul style="list-style-type: none"> • “Although they are not fractal, multilevel antennae are characterized in that they comprise a number of elements which may be distinguished in the overall structure.” 2:36-39. • “Thus, the main characteristic of multilevel antennas are the following: <ul style="list-style-type: none"> ○ A multilevel geometry comprising polygon or polyhedron of the same class, electromagnetically coupled and grouped to form a larger structure. In multilevel geometry most of these elements are clearly visible as their area of contact, intersection or interconnection (if these exist) with other elements is always less than 50% of their perimeter. 	<p>TCL: Indefinite</p> <p>Alternatively: “a structure for an antenna useable at multiple frequency bands (proportional to the number of levels of detail) with at least two levels of detail, wherein one level of detail makes up another level. These levels of detail are composed of polygons (polyhedrons) of the same type with the same number of sides (faces) wherein at least 75% of the polygons (polyhedrons) are clearly visible and individually distinguishable and at least 75% of the polygons (polyhedrons) having an area of contact, intersection or interconnection with other elements (polygons or polyhedrons) that is less than 50% of the perimeter or area.”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:20-25, 1:48-2:43, 2:44-5:45, 5:46-65, 6:53-7:33, 8:53-60, 9:38-40, Figs. 1-8, 11.</p> <p>’432 patent, <i>inter partes</i> reexamination, Control No. 95/001,483, at:</p> <ul style="list-style-type: none"> • Patent Owner’s Response to Office Action (07/07/2011) at pp. 6-9, 11, 16-19, 25. • Action Closing Prosecution (08/02/2012) at p.12. • Patent Owner’s Reply to Action Closing Prosecution (10/02/2012) at pp. 4, 6, 9-25, 29-31, 37-38. • Patent Owner’s Reply to Right of Appeal Notice (02/08/2013) at pp. 6-9.

	<ul style="list-style-type: none"> ○ The radioelectric behavior resulting from the geometry: multilevel antennae can present a multiband behavior (identical or similar for several frequency bands) and/or operate at a reduced frequency, which allows to reduce their size.” 3:30-44. • “In specialized literature it is already possible to find descriptions of certain antennae designs which allow to cover a few bands. However, in these designs the multiband behavior is achieved by grouping several single band antennae or by incorporating reactive elements in the antennae (concentrated elements as inductors or capacitors or their integrated versions such as posts or notches) which force the apparition of new resonance frequencies. Multilevel antennae on the contrary base their behavior on their particular geometry, offering a greater flexibility to the antenna designer as to the number of bands (proportional to the number of levels of detail), position, relative spacing and width, and thereby offer better and more varied characteristics for the final product.” 3:45-57. • “The present invention relates to an antenna which includes at least one construction element in a multilevel structure form. A multilevel structure is characterized in that it is formed by gathering several polygon or polyhedron of the same type (for example triangles, parallelepipeds, pentagons, hexagons, etc., even circles or ellipses as special limiting cases of a polygon with a large number of 	<ul style="list-style-type: none"> • Patent Owner’s Appeal Brief (05/06/2013) at pp. 4-13. • Patent Owner’s Rebuttal Brief (08/05/2013) at pp. 2, 3, 8. <p>’431 patent, <i>inter partes</i> reexamination, Control No. 95/001,482, at:</p> <ul style="list-style-type: none"> • Applicant Arguments/Remarks made in an Amendment, (08/15/2011) at pp. 16-41, 45. • Affidavit Exhibit I - Puente Declaration (08/15/2011) at pp. 7-10. • Affidavit Exhibit III - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011) at pp. 6-9. • Patent Owner’s Response to Action Closing Prosecution (01/03/2012) at p. 20. • Patent Owner’s Appeal Brief (01/03/2012) at p. 26. • Patent Owner’s Patent Owner’s Rebuttal Brief (08/16/2013) at pp. 2-8. <p>’432 patent, <i>ex parte</i> reexamination, Control No. 90/013,024, at:</p> <ul style="list-style-type: none"> • Determination--Reexam Ordered (11/01/2013) at p. 12. • Non-Final Action (10/17/2014) at p. 4. <p>Carles Puente Baliarda, Fractal Antennas; Ph.D. Dissertation, May 1997, Electromagnetics and Photonics Engineering Group, Dept. of Signal Theory and Commc’ns, Universitat Politecnica de Catalunya; Barcelona, Spain.</p> <p>Puente-Baliarda, Carles, et al., “On the behavior of the Sierpinski Multiband Fractal Antenna,” IEEE Transactions on Antennas and Propagation, vol. 46, No. 4, pp. 517-524, Apr. 1998.</p>
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	<p>a fraction of the perimeter of said polygons or polyhedrons. Furthermore, in some of the embodiments the interaction between the polygons or polyhedrons does not occur by direct contact, but rather via asole electromagnetic coupling.” FRACTCL4035859.</p> <ul style="list-style-type: none"> • “In the multilevel geometry this manner of connecting each element (the contact zone between the elements is lower than 50% of the perimeter or area in at least 75% of the polygons or polyhedrons), is deliberate, given that it is precisely in this manner how the multilevel antenna that has all the operating functions sought is attained.” FRACTCL4035859. • “The multilevel geometry is in reality a simple concept yet radically different to a fractal geometry, given that a multilevel structure simply consists in connecting electromagnetically (ohmic contact or capacitive coupling), with any disposition on a plane or in space, polygons or polyhedrons with the same number of sides or faces but which may be of a different size and form, with the particularity that the contact zone between polygons or polyhedrons is less than 50% of the perimeter or area in at least 75% of the polygons or polyhedrons.” FRACTCL4035860. • “A multilevel antenna is not an array of antennas but a single one consisting of polygons or polyhedrons having multiband performance on its own.” FRACTCL4036070. <p>“The skilled person would deduce that the only conditions to implement</p>	<p>Partes Review of U.S. Patent No. 9,362,617 (TCL-FRAC00085979 - TCL-FRAC00086178), pgs. 25-29.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 8,976,069 (TCL-FRAC00079430 – TCL-FRAC00079641), pgs. 26-29.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,054,421 (TCL-FRAC00081645 - TCL-FRAC00081838), pgs. 26-30.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
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	<p>multilevel geometries are the following: a multilevel geometry comprises polygons or polyhedrons of the same class (same number of sides or faces); the polygons or polyhedrons are electromagnetically coupled and grouped to form a larger structure; and the area of contact, intersection or interconnection (if exist) with other elements is always less than 50% of their perimeter.” FRACTCL4036144. Reexam:</p> <ul style="list-style-type: none"> • [Patentee] “A multilevel structure achieves multiband behavior through multiple scales of structural detail, and does not achieve multiband behavior through groupings of single band antennas or through the inclusion of reactive elements to force new resonant frequencies.” ’431 reexam FRACTCL0000106. • [PTO] “Many features of a multilevel structure can be seen at col. 4 line 51 et seq., which starts with ‘A multilevel structure is characterized in that...’ From this, we gather several important characteristics: <ul style="list-style-type: none"> ○ A plurality of polygons of the same type (i.e. same number of sides) ○ The polygons are electromagnetically coupled, via direct contact or by close proximity ○ At least 75 % of the elements (polygons) have more than 50% of their perimeter not in contact with other elements of the structure ○ Due to the above, one can individually distinguish most of the component polygons, presenting at least two levels of 	
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	<p>detail: that of the overall structure, and that of the polygons that form it. To the extent this feature is not claimed, it appears essential to the definition as it is the very reason behind the name multilevel. Col. 2 lines 34-38, 55-59.</p> <ul style="list-style-type: none"> ○ The construction materials and the configuration in an antenna (i.e. monopole, dipole, patch, etc.) do not affect the definition; the geometry of the structure is what matters. Col. 5 line 62-col. 6 line 22. <p>These characteristics appear to be the most basic definition of a multilevel structure and come with the term when it is in the claims.</p> <p>Thus, so far, we take the meaning of ‘multilevel structure’ with regards to the present claims to include the bulleted material above.” ’431 reexam. FRACTCL4030111.</p> <p><u>Extrinsic Evidence:</u></p> <p>“A structure for an antenna useable at multiple frequency bands with at least two levels of detail, wherein one level of detail makes up another level. These levels of detail are composed of polygons (polyhedrons) of the same type with the same number of sides (faces) wherein most of the polygons (polyhedrons) are clearly visible and individually distinguishable and most of the polygons (polyhedrons) having an area of contact, intersection or interconnection with other elements (polygons or polyhedrons) that is less than 50% of the perimeter or area.” Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 17.</p>	
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	FRACTCL4035681-82.	
“structure for the multi-band antenna” <ul style="list-style-type: none"> • ’617: 17, 19 • ’632: 17 	Fractus: Same construction as “multilevel structure.” <p>In addition to the same evidence as “multilevel structure,” also see Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 17.</p>	TCL: Same construction and evidence as “multilevel structure.”
“antenna element [having / with] [a / the] multiband behavior” <ul style="list-style-type: none"> • ’069: 32, 46 • ’421: 1, 11 	Fractus: Same construction as “multilevel structure.” <p>In addition to the same evidence as “multilevel structure,” also see Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 21.</p>	TCL: Same construction and evidence as “multilevel structure.”
“geometric element(s)” <ul style="list-style-type: none"> • ’431: 1, 14, 30 • ’432: 1, 6 • ’069: 32, 46 • ’421: 1, 5-7, 10 • ’541: 17 • ’617: 17 	Fractus: “a closed plane figure bounded by straight sides, further including circles and ellipses, where a portion of a circle or ellipse is counted as one side” <p><u>Intrinsic Evidence:</u></p> <p><i>Specification (’432 patent):</i></p> <ul style="list-style-type: none"> • “The present invention relates to antennae formed by sets of similar geometrical elements (polygons, polyhedrons) electro magnetically coupled and grouped such that in the antenna structure may be distinguished each of the basic elements which form it.” 1:20-24. • “The present invention consists of an antenna whose radiating element is characterized by its geometrical shape, which basically comprises several polygons or polyhedrons of the same type.” 2:44-47. • “That it, it comprises for example triangles, squares, pentagons, hexagons or even circles and ellipses as a limiting case of a 	TCL: “polygon(s) or polyhedron(s)” <p>“Polygon: a closed plane figure bounded by straight lines or closed plane bound by a circle or an ellipse”</p> <p>“Polyhedron: a closed solid figure bounded by polygons”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at Abstract 1:20-24, 2:60-64, 3:8-11, 5:8-11, Figs. 1-7.</p> <p>Carles Puente Baliarda, Fractal Antennas; Ph.D. Dissertation, May 1997, Electromagnetics and Photonics Engineering Group, Dept. of Signal Theory and Comm’n’s, Universitat Politecnica de Catalunya; Barcelona, Spain.</p> <p><u>Extrinsic Evidence:</u></p> <p>Fractus v. Samsung et al., Case No. 6:09-cv-203 (D.I. 423, 526, 611, 887, 889, 893, and 901).</p>

	<p>polygon with a large number of sides, as well as tetrahedral, hexahedra, prisms, dodecahedra, etc. coupled to each other electrically (either through at least one point of contact o[r] through a small separation providing a capacitive coupling) and grouped in structures of a higher level such that in the body of the antenna can be identified the polygonal or polyhedral elements which it comprises.” 2:47-55.</p> <ul style="list-style-type: none"> • “In a multilevel structure all the component elements are polygons with the same number of sides or polyhedron with the same number of faces.” 5:8-11. <p><i>Claims:</i></p> <ul style="list-style-type: none"> • ’432 claim 2: “The multi-band antenna as set forth in claim 1, wherein at least some of the plurality of geometric elements have perimeter regions comprising a curve.” • ’432 claim 3: “The multi-band antenna as set forth in claim 1, wherein at least some of the plurality of geometric elements have perimeter regions comprising both linear and nonlinear portions.” <p><i>PCT Application:</i></p> <ul style="list-style-type: none"> • Original claim 1 claimed “a set of polygonal or polyhedral elements of the same type (same number of sides or faces) although not necessarily of the same size.” FRACTCL4035805. <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 34. 	<p>Merriam-Webster’s Collegiate Dictionary 10th ed. at 903 (TCL-FRAC00100067) (“polygon” and “polyhedron”).</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,394,432 (TCL-FRAC00025940 - TCL-FRAC00026110), pgs. 30-31.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,397,431 (TCL-FRAC00038463 - TCL-FRAC00038673), pg. 31.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 8,941,541 (TCL-FRAC00075812 - TCL-FRAC00076005), pgs. 30-31.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 8,976,069 (TCL-FRAC00079430 - TCL-FRAC00079641), pgs. 29-30.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,054,421 (TCL-FRAC00081645 - TCL-FRAC00081838), pg. 30.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,362,617 (TCL-FRAC00085979 - TCL-FRAC00086178), pgs. 29-30.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
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<p>“said second and portions being located substantially within the first portion”</p> <ul style="list-style-type: none"> • ’432: 1 <p>“second portion [being] located substantially within the first portion”</p> <ul style="list-style-type: none"> • ’431: 1 • ’632: 17 • ’617: 17 <p>“third portion located substantially within the first portion”</p> <ul style="list-style-type: none"> • ’632: 17 • ’617: 17 	<p>Fractus: “the second and third portions have an area that substantially overlaps an area of the first portion, where the portions differ in size or configuration”</p> <p>“the second portion has an area that substantially overlaps an area of the first portion, where the portions differ in size or configuration”</p> <p>“the third portion has an area that substantially overlaps an area of the first portion, where the portions differ in size or configuration”</p> <p><u>Intrinsic Evidence:</u></p> <p><i>Specification (’432 patent):</i></p> <ul style="list-style-type: none"> • “In specialized literature it is already possible to find descriptions of certain antennae designs which allow to cover a few bands. However, in these designs the multiband behavior is achieved by grouping several single band antennae or by incorporating reactive elements in the antennae (concentrated elements as inductors or capacitors or their integrated versions such as posts or notches) which force the apparition of new resonance frequencies. Multilevel antennae on the contrary base their behavior on their particular geometry, offering a greater flexibility to the antenna designer as to the number of bands (proportional to the number of levels of detail), position, relative spacing and width, and thereby offer better and more varied characteristics for the final product.” 3:45-57. 	<p>TCL: Indefinite</p> <p>Alternatively: Respectively,</p> <p>“second [and third] portion[s] being significantly inside or enclosed by the first portion, where the first portion, the second portion, and the third portion differ in size or configuration”</p> <p>“second portion being significantly inside or enclosed by the first portion, where the first portion and the second portion differ in size or configuration”</p> <p>“third portion being significantly inside or enclosed by the first portion, where the first portion and the third portion differ in size or configuration”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:20-24, 2:44-5:45, Figs. 1-8, 11.</p> <p>’432 Patent <i>inter partes</i> reexamination, Control No. 95/001,483, Action Closing Prosecution (08/02/2012), page 21.</p> <p>’431 patent, <i>inter partes</i> reexamination, Control No. 95/001,482 at:</p> <ul style="list-style-type: none"> • Affidavit Exhibit I - Puente Declaration (08/15/2011), pp. 7-10. • Affidavit Exhibit III - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-9. • Affidavit Exhibit IV - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-9. <p>’432 patent, <i>ex parte</i> reexamination, Control No. 90/013,024 at:</p>
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	<ul style="list-style-type: none"> • “The most relevant properties of the multilevel antennae are mainly due to their geometry and are as follows: the possibility of simultaneous operation in several frequency bands in a similar manner (similar impedance and radiation patterns) and the possibility of reducing their size compared to other conventional antennae based exclusively on a single polygon or polyhedron.” 6:27-33. • “Size reduction is particularly useful when the antenna must be concealed due to its unaesthetic or unaerodynamic effect when incorporated on a vehicle or a portable telecommunications device.” 6:37-42. <p><i>’431 Claims:</i></p> <ul style="list-style-type: none"> • Claim 14: “the second portion is a second level of structural detail within the first level of structural detail, the second portion being smaller than the first portion and having a second geometry configured to operate at the second selected frequency band.” <p><i>Reexam:</i></p> <ul style="list-style-type: none"> • [Office action response] “In the context of the specification, the recited ‘second portion being located substantially within the first portion’ means that the second portion has an area that ‘shares’ or ‘overlaps’ an area of the recited first portion. As the ’431 specification notes, structures are ‘grouped in higher order structures’ with the ‘number of frequency bands [being] proportional to the number of scales ... or similar sets in which they are grouped.’ (’431 patent, 2:50-51 and 3:6- 10). Such grouping relies on reusing by sharing or overlapping geometric elements, and the figures 	<ul style="list-style-type: none"> • Interview Summary (12/09/2014). • Patent Owner’s Statement of the Interview (12/17/2014). • Patent Owner’s Response to Office Action (12/17/2014) at pp. 10-11. • Notice of Intent to Issue Ex Parte Reexamination Certificate (03/13/2015) at p. 3. <p>’431 patent, ex parte reexamination, Control No. 90/013,023 at:</p> <ul style="list-style-type: none"> • Interview Summary (12/08/2014). • Patent Owner’s Statement of the Interview (12/17/2014). • Patent Owner’s Response to Office Action (12/17/2014) at p. 12. <p><u>Extrinsic Evidence:</u></p> <p>Merriam-Webster’s Collegiate Dictionary 10th ed. at 1359 (TCL-FRAC00100068) (“within”).</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,394,432 (TCL-FRAC00025940 - TCL-FRAC00026110), pgs. 32-35.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,397,431 (TCL-FRAC00038463 - TCL-FRAC00038673), pgs. 33-36.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,240,632 (TCL-FRAC00083867 - TCL-FRAC00084071), pgs. 31-34.</p>
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	<p>provided in the '431 patent exemplify the sharing or re-use of metal across the plurality of portions that make up the antenna shapes." '431 reexam. FRACTCL4030719, FRACTCL4030739-40, FRACTCL4030777, FRACTCL4030780.</p> <ul style="list-style-type: none"> • [Office action response] "The elements of the concentric microstrip square-ring antenna of Misra clearly do not have areas that are shared or overlap one another." '431 reexam FRACTCL4030720. • [Office action response] "Since a multiband antenna needs to support currents at each band, the absence of independent regions requires that the currents overlap at different frequency bands. The elements of the concentric microstrip triangular-ring antenna of Misra-Chowdhury clearly do not have areas that are shared or overlap one another." '431 reexam FRACTCL4030740. • "It is clear from the claim language and the specification that the claim requires the second portion to share a substantial amount of conducting elements with the first portion. There is no other reasonable interpretation of this claim language." '431 reexam FRACTCL4032548. • "Multilevel structures nest structural levels of details (e.g., the overall structure, and smaller structures within the overall structure) wherein these nested structural levels of detail give rise to frequency bands." '431 reexam FRACTCL0000106. <p><u>Extrinsic Evidence:</u></p>	<p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,362,617 (TCL-FRAC00085979 - TCL-FRAC00086178), pgs. 29-30.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,362,617 (TCL-FRAC00085979 - TCL-FRAC00086178), pgs. 32-35.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
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	<ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 45-46. 	
<p>“said first[, / and], second[, and third] portions defining empty spaces in an overall structure”</p> <ul style="list-style-type: none"> • ’432: 1, 6 • ’431: 1 • ’541: 17 <p>“plurality of geometric elements arranged to define empty spaces in the antenna element”</p> <ul style="list-style-type: none"> • ’421: 1 	<p>Fractus: “Said first, second and third portions defining areas without conductive material in an overall structure.”</p> <p><u>Intrinsic Evidence:</u></p> <p><i>Specification (’432 patent):</i></p> <ul style="list-style-type: none"> • “Although they are not fractal, multilevel antennae are characterized in that they comprise a number of elements which may be distinguished in the overall structure. Precisely because they clearly show several levels of detail (that of the overall structure and that of the individual elements which make it up), antennae provide a multiband behavior and/or a small size. The origin of their name also lies in said property.” 2:35-43. • “Its designation as multilevel antenna is precisely due to the fact that in the body of the antenna can be identified at least two levels of detail: that of the overall structure and that of the majority of the elements (polygons or polyhedrons) which make it up.” 2:60-64. • “Thus, in a multilevel structure it is easy to identify geometrically and individually distinguish most of its basic component elements, presenting at least two levels of detail: that of the overall structure and that of the polygon or polyhedron elements which form it.” 4:66-5:4. <p><u>Extrinsic Evidence:</u></p>	<p>TCL: “two or more open spaces without conductive material and which are each enclosed within conductive material of[the first, second, and third portions of the overall structure / antenna element]”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 3:19-5:26.</p> <p>Prosecution history for ’432 patent, e.g., Office Action (Jan. 15, 2008) and Response to Office Action (Feb. 28, 2008).</p> <p>Prosecution history for ’431 patent, e.g., Office Action (Feb. 4, 2008) and Response to Office Action (Feb. 28, 2008).</p> <p><u>Extrinsic Evidence:</u></p> <p>American Heritage College Dictionary (3d ed. 1997), p. 684 (TCL-FRAC00100065) (“in”).</p> <p>U.S. Pat. No. 7,342,553 and prosecution history</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>

	<ul style="list-style-type: none"> Claim Construction Order, 6:09-CV-203, Dkt. No. 526, at 37-38. 	
<p>“the second portion is a second level of structural detail within the first level of structural detail”</p> <ul style="list-style-type: none"> '431: 14, 30 '432: 6 	<p>Fractus: No construction necessary.</p> <p><u>Intrinsic Evidence:</u></p> <p><i>Reexam:</i></p> <ul style="list-style-type: none"> “Instead, multilevel structures nest structural levels of details (e.g., the overall structure, and smaller structures within the overall structure) wherein these nested structural levels of detail give rise to frequency bands.” '431 reexam FRACTCL0000106. “Because levels of structural detail are nested within each other, the overall antenna structure corresponds to one of the bands. In other words, the overall antenna structure is designed to be as large as necessary to handle one of the bands. Levels of structural detail within the overall structure have smaller geometries that correspond to different frequency bands. As illustrated below in an annotated version of a simulation of FIG. 1 from the '431 Patent, the overall structure of the depicted multilevel structure is associated with a first frequency band.” '431 reexam FRACTCL0000106. <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 49. 	<p>TCL: “the second portion is a second level of structural detail inside or enclosed by the first level of structural detail, where a level of structural detail is clearly identifiable from another level of structural detail”</p> <p><u>Intrinsic Evidence:</u></p> <p>'432 patent at 1:20-24, 2:44-5:45, Figs. 1-8, 11.</p> <p>'432 Patent <i>inter parte</i> reexamination, Control No. 95/001,483, Action Closing Prosecution (08/02/2012), p. 21.</p> <p>'431 Patent <i>inter parte</i> reexamination, Control No. 95/001,482 at:</p> <ul style="list-style-type: none"> Affidavit Exhibit I - Puente Declaration (08/15/2011), pp. 7-10. Affidavit Exhibit III - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-7. Affidavit Exhibit IV - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-7. <p><u>Extrinsic Evidence:</u></p> <p>Merriam-Webster's Collegiate Dictionary 10th ed. at 1359 (TCL-FRAC00100067) (“within”).</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,394,432 (TCL-FRAC00025940 - TCL-FRAC00026110), pgs. 43-44.</p>

		<p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,397,431 (TCL-FRAC00038463 - TCL-FRAC00038673), pgs. 43-44.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>“number of sides”</p> <ul style="list-style-type: none"> • ’432:6 • ’431: 14, 30 • ’069: 46 • ’421: 5 • ’632: 17, 19 • ’617: 17 	<p>Fractus: no construction necessary</p> <p><u>Intrinsic Evidence:</u></p> <p><i>PCT Application:</i></p> <ul style="list-style-type: none"> • Original claim 1 claimed “a set of polygonal or polyhedral elements of the same type (same number of sides or faces) although not necessarily of the same size.” FRACTCL4035805. <p><i>Specification (’432 patent):</i></p> <ul style="list-style-type: none"> • “The present invention relates to antennae formed by sets of similar geometrical elements (polygons, polyhedrons) electro magnetically coupled and grouped such that in the antenna structure may be distinguished each of the basic elements which form it.” 1:20-24. • “The present invention consists of an antenna whose radiating element is characterized by its geometrical shape, which basically comprises several polygons or polyhedrons of the same type.” 2:44-47. • “In a multilevel structure all the component elements are polygons with the same number of sides or polyhedron with the same number of faces.” 5:8-11. <p><i>Claims:</i></p> <ul style="list-style-type: none"> • ’432 claim 2: “The multi-band antenna as set forth in claim 1, wherein at least some of the plurality of geometric elements 	<p>TCL: “number of straight sides for geometric elements bounded by straight sides, or a large number for geometric elements bounded by a circle or an ellipse”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:20-24, 2:44-5:45, Figs. 1-8, 11.</p> <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>

	<p>have perimeter regions comprising a curve.”</p> <ul style="list-style-type: none"> • ’432 claim 3: “The multi-band antenna as set forth in claim 1, wherein at least some of the plurality of geometric elements have perimeter regions comprising both linear and nonlinear portions.” <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 39. • “Polygon: a closed plane figure bounded by straight sides, further including circles and ellipses, where a portion of a circle or ellipse is counted as one side.” Supplemental Claim Construction Order, 6:09-CV- 203, Dkt. No. 901, at 6 FRACTCL4035729. • “A person of ordinary skill in the art, reading the specification and claims of the MLV patents would understand that when counting the sides of a polygon, a ‘curved side’ consisting of a portion of a circle or ellipse should be counted as one side.” Supplemental Claim Construction Order, 6:09-CV-203, Dkt. No. 901, at 6 FRACTCL4035729. 	
<p>“fractal type antenna”</p> <ul style="list-style-type: none"> • ’421: 1 	<p>Fractus: “an antenna with a self-similar shape generated in an iterative manner on different scaling levels”</p> <p><u>Intrinsic Evidence:</u></p> <p><i>PCT Application:</i></p> <ul style="list-style-type: none"> • By fractal geometry, as has been divulged in D1, we must understand a form whereby each one of the parts that composes same has an identical form to the global structure of the object, but on a 	<p>TCL: Indefinite</p> <p>Alternatively: “an antenna possessing ideal fractal geometry”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:36-63, 4:1-3.</p> <p><u>Extrinsic Evidence:</u></p>

	<p>different scaling level. That is, they are self-similar forms generated in an iterative manner.” FRACTCL4035857-58.</p> <ul style="list-style-type: none"> • “The multilevel concept does not imply the existence of selfsimilarity or self-scaling of the geometry, as compulsorily occurs in the case of the fractal antennas that have been defined in D1.” FRACTCL4035859. • “Fractal geometries as defined in the prior art documents are basically characterized by being self-similar structures...By selfsimilar, according to the definition given by the background art, should be understood a structure that can be broken into several parts that are ALL equal to the overall structure. A self-similar object is fully decomposed into a number of parts which shape is equal to the shape of the overall object.” FRACTCL4036068. <p><i>’432 Specification:</i></p> <ul style="list-style-type: none"> • “From a scientific standpoint strictly fractal antennae are impossible, as fractal objects are a mathematical abstraction which include an infinite number of elements. It is possible to generate antennae with a form based on said fractal objects, incorporating a finite number of iterations. The performance of such antennae is limited to the specific geometry of each one. For example, the position of the bands and their relative spacing is related to fractal geometry and it is not always possible, viable or economic to design the antennae maintaining its fractal appearance and at the same time placing the bands at the correct area of the radioelectric spectrum. 	<p>Fractus v. Samsung et al., Case No. 6:09-CV-203 (D.I. 526, at 10-11, D.I. 423, 611, 887, 889, 893, and 901).</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
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	<p>To begin, truncation implies a clear example of the limitations brought about by using a real fractal type antenna which attempts to approximate the theoretical behavior of an ideal fractal antenna. Said effect breaks the behavior of the ideal fractal structure in the lower band, displacing it from its theoretical position relative to the other bands and in short requiring a too large size for the antenna which hinders practical applications.” 1:59-2:10.</p> <ul style="list-style-type: none"> • “In addition to such practical problems, it is not always possible to alter the fractal structure to present the level of impedance of radiation diagram which is suited to the requirements of each application. Due to these reasons, it is often necessary to leave the fractal geometry and resort to other types of geometries which offer a greater flexibility as regards the position of frequency bands of the antennae, adaptation levels and impedances, polarization and radiation diagrams.” 2:11-19. <p>Reexam:</p> <ul style="list-style-type: none"> • [Patentee] “Fractal antennas are based on fractals whose underlying patterns are selfsimilar.” ’431 reexam FRACTCL4030665. • [Puente declaration] “Unlike a fractal or mathematical fractal, a fractal antenna is limited in size and resolution, and therefore it cannot repeat the underlying fractal pattern an infinite number of times. This physical limitation of fractal antennas triggered the need for research that was undertaken to understand this pragmatic limitation, as well as other 	
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	<p>limitations, of fractal antennas.” ’431 reexam FRACTCL4030855.</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 60. 	
<p>“level(s) of detail”</p> <ul style="list-style-type: none"> • ’632: 17 <p>“level of structural detail”</p> <ul style="list-style-type: none"> • ’432: 6 • ’431: 14, 30 	<p>Fractus: “a first level of detail that clearly shows the overall structure, and a second level of detail that clearly shows most of the individual elements”</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 28. 	<p>TCL: “a level of structure in the multilevel structure that is clearly identifiable from another level of structural detail”</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:20-24, 2:44-5:45, Figs. 1-8, 11.</p> <p>’431 Patent <i>inter parte</i> reexamination, Control No. 95/001,482, at:</p> <ul style="list-style-type: none"> • Affidavit Exhibit III - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-7. • Affidavit Exhibit IV - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-7. <p><u>Extrinsic Evidence:</u></p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,240,632 (TCL-FRAC00083867 - TCL-FRAC00084071), pgs. 30-31.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>“substantially similar impedance level and radiation pattern”</p> <ul style="list-style-type: none"> • ’421: 1 • ’069: 33 	<p>Fractus: No construction necessary.</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶¶ 40-42 	<p>TCL: Indefinite</p> <p>Alternatively: “substantially similar impedance level as characterized by the return loss (L_R) which must be less than -14 dB or equivalent SWR (<1.5), and substantially similar radiation pattern”</p>

<p>“radio electric behavior substantially similar”</p> <ul style="list-style-type: none"> • ’432: 1 • ’431: 1 • ’541: 17 <p>“substantially similar combined amount of resistance and reactance ... and radiation pattern”</p> <ul style="list-style-type: none"> • ’617: 17 		<p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 3:1-8, 6:27-33, 7:40-46, 8:36-46, 8:53-60, 9:27-45, Figs. 9, 10, 12, 13.</p> <p>’432 Patent <i>inter partes</i> reexamination, Control No. 95/001,483, Patent Owner’s Response to Office Action (07/07/2011), pages 26, 35, 55, 65, 70-73, 85, 86, 90.</p> <p>’431 Patent <i>inter partes</i> reexamination, Control No. 95/001,482 at:</p> <ul style="list-style-type: none"> • Patent Owner’s Response to Office Action (08/15/2011), pp. 59-60, 145. • Affidavit Exhibit II, Puente Declaration (08/15/2011), ¶ 11, p. 7. • Patent Owner’s Response to Action Closing Prosecution (01/03/2012), p. 18. <p><u>Extrinsic Evidence:</u></p> <p>Fractus v. Samsung et al., Case No. 6:09-CV-203 (D.I. 526, at, e.g., 18-19; D.I. 423, 611, 887, 889, 893, and 901).</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,394,432 (TCL-FRAC00025940 - TCL-FRAC00026110), pgs. 35-43.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 7,397,431 (TCL-FRAC00038463 - TCL-FRAC00038673), pgs. 36-43.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No.</p>
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		<p>8,941,541 (TCL-FRAC00075812 - TCL-FRAC00076005), pgs. 35-42.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 8,976,069 (TCL-FRAC00079430 - TCL-FRAC00079641), pgs. 31-39.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,054,421 (TCL-FRAC00081645 - TCL-FRAC00081838), pgs. 32-40.</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 9,362,617 (TCL-FRAC00085979 – TCL-FRAC00086178), pgs. 35-43.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>“overall structure of the conductive radiating element”</p> <ul style="list-style-type: none"> • ’431: 1 • ’432: 1 • ’541: 17 <p>“overall structure”</p> <ul style="list-style-type: none"> • ’431: 14, 30 • ’432: 6 	<p>Fractus: No construction necessary.</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 28. 	<p>TCL: Plain and ordinary meaning (not “any portion of the antenna that radiates in one or more of the claimed frequency band(s)”)</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 2:36-43, 2:44-67, 4:66-5:4, Figs. 1-8, 11.</p> <p>’432 patent <i>ex parte</i> reexamination, Control No. 90/013,024, Patent Owner’s Response to Office Action (12/17/2014) at p. 10.</p> <p>’431 patent <i>ex parte</i> reexamination, Control No. 90/013,023, Patent Owner’s Response to Office Action (12/17/2014) at p. 11.</p> <p><u>Extrinsic Evidence:</u></p>

		Fractus v. ZTE, Case No. 2:17-cv-561 (E.D. Tex.), Dkt. No. at 50-54. Expert testimony of Chris G. Bartone, Ph.D., P.E.
“circuitous current” <ul style="list-style-type: none"> • ’432: 1 • ’431: 1 • ’632: 17 	Fractus: No construction necessary. <u>Intrinsic Evidence:</u> <i>’431 Specification</i> <ul style="list-style-type: none"> • “the path followed by the electric current on the multilevel structure is longer and more winding than in a simple geometry....” 3:16-19. <u>Extrinsic Evidence:</u> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 31 	TCL: Indefinite <u>Intrinsic Evidence:</u> ’432 patent at 3:19-23. ’432 Patent <i>inter partes</i> reexamination, Control No. 95/001,483, at: <ul style="list-style-type: none"> • Patent Owner’s Response to Office Action (07/07/2011), pp. 20-21, 67, 71, 77, 86. • Action Closing Prosecution (08/02/2012), p. 27. • Patent Owner’s Response to Action Closing Prosecution (10/02/2012), pp. 25-29, 31-32. • Patent Owner’s Appeal Brief (05/06/2013), pp. 14-16. • Patent Owner’s Rebuttal Brief (08/05/2013), at pp. 9-10, 12-14, 18, 20. ’431 Patent <i>inter partes</i> reexamination, Control No. 95/001,482, at: <ul style="list-style-type: none"> • Patent Owner’s Response to Office Action (08/15/2011), p. 131. • Patent Owner’s Response to Action Closing Prosecution (01/03/2012), pp. 11, 12, 45. • Patent Owner’s Appeal Brief (02/22/2013), pp. 22-23. <u>Extrinsic Evidence:</u> Expert testimony of Chris G. Bartone, Ph.D., P.E.
“current within [the/said] [first/second/third] portion” <ul style="list-style-type: none"> • ’541: 17 	Fractus: No construction necessary. <u>Extrinsic Evidence:</u> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 32 	
“winding current” <ul style="list-style-type: none"> • ’069: 32 • ’421: 1 	Fractus: No construction necessary. <u>Extrinsic Evidence:</u> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 33 	
“electric currents on the [first/second] portion” <ul style="list-style-type: none"> • ’617: 17 	Fractus: No construction necessary. <u>Extrinsic Evidence:</u> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 34 	
“wherein the geometric elements are arranged such that	Fractus: No construction necessary. <u>Intrinsic Evidence:</u>	TCL: Indefinite <u>Intrinsic Evidence:</u>

<p>that the antenna element does not comprise a group of single band antennas that respectively operate in the at least first and second non-overlapping frequency bands”</p> <ul style="list-style-type: none"> • ’421: 1 • ’069: 32 	<p><i>’421 Specification</i></p> <ul style="list-style-type: none"> • “In specialized literature it is already possible to find descriptions of certain antennae designs which allow to cover a few bands. However, in these designs the multiband behavior is achieved by grouping several single band antennae....” 3:66-4:2. <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 39 	<p>’432 patent at 3:45-57, 6:27-42, Figs. 1-8, 11.</p> <p>’432 patent, <i>inter partes</i> reexamination, Control No. 95/001,483, at:</p> <ul style="list-style-type: none"> • Patent Owner’s Response to Office Action (07/07/2011) at pp. 6-9, 11, 16-19, 25. • Action Closing Prosecution (08/02/2012) at p.12. • Patent Owner’s Reply to Action Closing Prosecution (10/02/2012) at pp. 4, 6, 9-25, 29-31, 37-38. • Patent Owner’s Reply to Right of Appeal Notice (02/08/2013) at 6-9, 13-14. • Patent Owner’s Appeal Brief (05/06/2013) at 4-13. • Patent Owner’s Rebuttal Brief (08/05/2013) at pp. 3, 8. <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>“generally identifiable”</p> <ul style="list-style-type: none"> • ’632: 17 • ’617:17 	<p>Fractus: No construction necessary</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 35 	<p>TCL: Indefinite</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at Abstract, 2:44-67, 3:1-15, 4:51-5:14, 5:35-42, Figs. 1-8, 11.</p> <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>“at least substantial parts of said second and third portions being part of the first portion”</p> <ul style="list-style-type: none"> • ’541: 17 	<p>Fractus: “the second and third portions have areas that substantially overlap an area of the first portion, where the portions differ in size or configuration”</p> <p><u>Extrinsic Evidence:</u></p>	<p>TCL: Indefinite</p> <p><u>Intrinsic Evidence:</u></p> <p>’432 patent at 1:20-24, 2:44-5:45, Figs. 1-7.</p>

	<p>Claim Construction Order, 2:17-CV-00561-JRG, Dkt. No. 93, at 45.</p>	<p>'432 Patent <i>inter parte</i> reexamination, Control No. 95/001,483, Action Closing Prosecution (08/02/2012), p. 21.</p> <p>'431 Patent, <i>inter parte</i> reexamination, Control No. 95/001,482, Affidavit Exhibit I - Puente Declaration (08/15/2011), pp. 7-10.</p> <p>'431 Patent <i>inter parte</i> reexamination, Control No. 95/001,482, at:</p> <ul style="list-style-type: none"> • Affidavit Exhibit III - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-9. • Affidavit Exhibit IV - Joint Declaration of Puente, Borja, Anguera, and Soler (08/15/2011), pp. 6-9. <p><u>Extrinsic Evidence:</u></p> <p>Merriam-Webster's Collegiate Dictionary 10th ed. at 1359 (TCL-FRAC00100067) ("within").</p> <p>Declaration of Chris G. Bartone, Ph.D., P.E. in Support of Petition for Inter Partes Review of U.S. Patent No. 8,941,541 (TCL-FRAC00075812 - TCL-FRAC00076005), pgs. 32-34.</p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>"portions substantially overlap"</p> <ul style="list-style-type: none"> • '632: 17 • '617: 17 	<p>Fractus: No construction necessary</p> <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 37 	<p>TCL: Indefinite</p> <p><u>Intrinsic Evidence:</u></p> <p>'432 patent at Figs. 1-7.</p> <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>"associated with"</p>	<p>Fractus: No construction necessary.</p>	<p>TCL: Indefinite</p>

<ul style="list-style-type: none"> • '432: 1 • '431: 1 • '541: 17 	<p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 38 	<p><u>Intrinsic Evidence:</u></p> <p>'432 Patent <i>inter partes</i> reexamination, Control No. 95/001,483, Patent Owner's Response to Office Action (07/07/2011), pp. 31-32, 75, 88.</p> <p>'431 patent <i>inter partes</i> reexamination, Control No. 95/001,483 (08/15/2011), pp. 72, 91-92, 154-155.</p> <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>
<p>"a closed figure defined by a free perimeter thereof and a projection of ones of the longest exposed perimeters thereof to define the least number of closed figures within the region necessary to form the generally distinguishable closed figures"</p> <ul style="list-style-type: none"> • '632: 17 	<p>Fractus: No construction necessary</p> <p><u>Intrinsic Evidence:</u></p> <p><u>'632 Specification</u></p> <ul style="list-style-type: none"> • "the area of contact or intersection (if it exists) between the majority of the elements forming the antenna is only a fraction of the perimeter or surrounding area of said polygons or polyhedrons." 3:19:22. • Also FIG. 1 of the '632 Patent, which describes a free perimeter as a small area of a non-overlapping triangle: "FIG. 1 shows a multilevel element exclusively consisting of triangles of various sizes and shapes. Note that in this particular case each and every one of the elements (triangles, in black) can be distinguished, as the triangles only overlap in a small area of their perimeter, in this case at their vertices." 5:36:40. <p><u>Extrinsic Evidence:</u></p> <ul style="list-style-type: none"> • Declaration of S. Long ¶ 36 	<p>TCL: Indefinite</p> <p><u>Intrinsic Evidence:</u></p> <p>'432 patent at Figs. 1-8, 11.</p> <p><u>Extrinsic Evidence:</u></p> <p>Expert testimony of Chris G. Bartone, Ph.D., P.E.</p>

